Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A method for generating hardware configuration data directly from software constructs and configuring a programmable logic resource with the hardware configuration data, the method comprising:

parsing high-level software programming code ~~wherein the code is~~ transparent with regard to hardware ~~resources and hardware configuration~~ to locate at least one expression in the programming code that is used more than once in the program; ~~and~~

compiling hardware configuration data directly from the high-level software programming code, wherein the ~~hardware configuration data directly configures a programmable logic resource~~ hardware configuration data is configured to:

use a single set of hardware resources to implement the at least one expression,

generate a control flow in the hardware, wherein the control flow indicates a status for a block and the status indicates a capability for speculation,

couple an input environment to the block that carries information into the block, and

couple an output environment to the block that carries information out of the block, and

configuring the programmable logic resource with the hardware configuration data, wherein the programmable logic resource is configured to make run-time decisions

regarding executing the block at least partially based on the control flow, and to select instances that will have access to the single set of hardware resources.

2. (Original) The method of claim 1 wherein compiling hardware configuration data comprises compiling hardware configuration data to implement blocks.

3. (Original) The method of claim 2 wherein implementing blocks comprises representing software variables as a set of wires, wherein the set of wires comprise data wires and a computed wire to denote the variable is valid.

4. (Currently Amended) The method of claim 1 wherein ~~compiling hardware configuration data comprises compiling hardware configuration data that generates hardware~~ the programmable logic resource is capable of making run-time decisions with regard to pipelining.

5. (Cancelled)

6. (Currently Amended) The method of claim 1 wherein ~~compiling hardware configuration data comprises compiling hardware configuration data that generates hardware~~ the programmable logic resource is capable of making run-time decisions with regard to speculative execution.

7. (Currently Amended) The method of claim 1 wherein ~~compiling hardware configuration data comprises compiling hardware configuration data that generates hardware~~

the programmable logic resource is capable of making run-time decisions with regard to parallel execution.

8. (Original) The method of claim 1 wherein parsing the high-level programming code comprises parsing code selected from C code, C++ code, JAVA code, LISP code, BASIC code, Pascal code, COBOL code, Fortran code, and a combination thereof.

9. (Cancelled)

10. (Currently Amended) The method of claim [[9]] 1 wherein making run-time decisions regarding execution of the block comprises deciding to execute the block.

11. (Currently Amended) The method of claim [[9]] 1 wherein making run-time decisions regarding execution of the block comprises deciding not to execute the block.

12. (Cancelled)

13. (Currently Amended) The method of claim [[9]] 1 wherein making run-time decisions comprises deciding to execute the block speculatively and in parallel.

14. (Original) The method of claim 13 wherein there is no data dependency between blocks being executed speculatively and in parallel.

15. (Original) The method of claim 13 further comprising sharing a common variable between blocks being

executed speculatively and in parallel, wherein there is no data dependency between the blocks being executed speculatively and in parallel.

16. (Currently Amended) The method of claim [[12]] 1 wherein the block is not comprised of any mutable operations.

17. (Currently Amended) The method of claim [[12]] 1 wherein the block is comprised of a mutable operation, and wherein the mutable operation overwrites hardware states that are not needed.

18. (Cancelled)

19. (Currently Amended) The method of claim [[9]] 1 further comprising implementing a software program in the hardware.

20. (Cancelled)

21. (Currently Amended) The method of claim [[15]] 1 further comprising using a single set of hardware resources to implement a function of the software program.

22. (Currently Amended) The method of claim [[15]] 1 wherein the optimizing takes place at a later stage of the compilation.

23. (Currently Amended) The method of claim [[15]] 1 wherein the optimizing is transparent to a user.

24. (Cancelled)

25. (Currently Amended) The method of claim [[24]] 1 wherein the input environment comprises wires that implement elements selected from a group consisting of control flow, variables, arrays, pointers, expressions, a reset signal, and a combination thereof.

26. (Currently Amended) The method of claim [[24]] 1 wherein the output environment comprises wires that implement elements selected from a group consisting of control flow, variables, arrays, pointers, expressions, a done signal, and a combination thereof.

27. (Currently Amended) A method for ~~mapping~~ generating hardware configuration data directly from software constructs ~~into hardware constructs based on the software constructs~~ and configuring a programmable logic resource with the hardware configuration data, the method comprising:

parsing ~~the~~ high-level software constructs that are transparent with regard to hardware; ~~and~~

compiling hardware configuration data directly from the high-level software constructs, wherein the compiling comprises mapping a software construct variable into a hardware construct comprising a set of wires, wherein one of the wires indicates whether the variable has been computed and the remainder of the wires indicate a value of the variable; and

configuring a programmable logic resource with the hardware configuration data.

28-37 (Cancelled)